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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/019,995	11/20/2001	Yaeta Endo	3190-012	8810

7590 08/25/2003

Luke A Kilyk
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Warrenton, VA 20186

EXAMINER
KAM, CHIH MIN

ART UNIT	PAPER NUMBER
1653	

DATE MAILED: 08/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/019,995	ENDO ET AL.	
	Examin r	Art Unit	
	Chih-Min Kam	1653	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

P riod for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) *12,14,22 and 30* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11,13,15-21 and 23-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *02-02* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. In the preliminary amendment filed November 9, 2001, claims 4 and 7 have been amended, and new claims 15-30 have been added; and applicants' supplemental preliminary amendment filed May 28, 2003, claims 10, 11 and 13 have been amended. Therefore, claims 1-30 are pending.

Election/Restrictions

2. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions, which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in response to this action, to elect a single invention to which the claims must be restricted.

Group I, claims 1-11, 13, 15-21 and 23-29, drawn to a preparation containing cell extract for cell-free protein synthesis; and a method for cell-free protein synthesis in a system, comprising cell-extract and a reaction vessel used in the system, classified in class 435, subclasses 430.1 and 252.1.

Group II, claims 12, 14 and 22, drawn to a means/an appatus for cell-free protein synthesis, classified in class 435, subclasses 283.1 and 286.5.

Group III, claim 30, drawn to a protein synthesized by the method of cell-free protein synthesis, classified in class 530, subclass 350.

The claims of these groups are directed to different inventions that are not linked to form a single general concept. In this instance, a protein such as insulin and human growth hormone produced by in vitro protein synthesis is known in the art, see Choi, et al., U. S. Patent

5,593,856, the protein cited in the art is not different from the protein indicated in the claimed invention. Thus, the special technical feature is known and the claimed subject matter does not define a contribution which each of the claimed inventions, considered as a whole, makes over the prior art. Furthermore, the claims in the different groups do not have in common the same or corresponding technical features, e.g., Group I is directed to a preparation containing cell extract for cell-free protein synthesis and a method of cell-free protein synthesis, while Group II is directed to an apparatus for the cell-free protein synthesis, and Group III is directed to a protein produced by in vitro protein synthesis. Accordingly, the claims are not so linked by a special technical feature within the meaning of PCT Rule 13.2 so as to form a single inventive concept and lack of unity is deemed proper.

Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement is traversed (37 CFR 1.143).

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

During a telephone conversation with Luke Kilyk on August 18, 2003 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-11, 13, 15-21 and 23-29. Affirmation of this election must be made by applicant in replying to this Office action. Claims 12, 14, 22 and 30 are withdrawn from further consideration by the examiner, 37

CFR 1.142(b), as being drawn to a non-elected invention. Therefore, claims 1-11, 13, 15-21 and 23-29 are examined.

Foreign Priority

3. Applicant claims for foreign priority under 35 U.S.C. 119(a)-(d), however, applicant has not provided an English translation of the foreign applications (Japan 11/130393, Japan 11/130395 and Japan 11/151599). Therefore, the priority date is not perfected.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1, 4-11, 13, 15-21 and 23-29 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a preparation of a cell extract for cell-free protein synthesis, wherein the substance inhibiting the protein synthesis is removed by treating the extract of embryo with non-ionic surfactant or with the combination of non-ionic surfactant and ultrasonication; a method of synthesizing protein in a cell-free protein synthesis system using the cell extract and other essential substances such as amino acids, energy sources and ionic components; or, a preparation of a cell extract wherein tritin is removed by treating the germ extract with antibody of tritin, and a method of synthesizing protein in a cell-free protein synthesis system using the germ extract and essential substances for protein synthesis as indicated in the prior art, does not reasonably provide enablement for a preparation of a cell extract for cell-free protein synthesis, wherein the material inhibiting the protein synthesis is removed by an unspecified method or addition of unspecified substance; or a method of

synthesizing protein in a cell-free protein synthesis system using the cell extract alone or the cell extract and unspecified substances. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

Claims 1, 4-11, 13, 15-21 and 23-29 encompass a preparation of a cell extract for cell-free protein synthesis, wherein the material inhibiting the protein synthesis is removed (claims 1, 4-9, 13, 15-21); or a method of synthesizing protein in a cell-free protein synthesis system using the cell extract (claims 10, 11 and 23-29). The specification, however, only discloses cursory conclusions without data supporting the findings, which state that the present invention provides a preparation of a cell extract excluding a system involving inhibiting protein synthesis for cell-free protein synthesis, treatment of cell extracts by freeze-drying, and a method of protein synthesis using the cell-free protein synthesis system applied with molecular sieving or dialysis (pages 2-3). There are no indicia that the present application enables the full scope in view of a preparation of a cell extract for cell-free protein synthesis and a method of synthesizing protein using the cell extract as discussed in the stated rejection. The present application provides no indicia and no teaching/guidance as to how the full scope of the claims is enabled. The factors considered in determining whether undue experimentation is required, are summarized in In re Wands (858 F2d at 731,737, 8 USPQ2d at 1400,1404 (Fed. Cir.1988)). The factors most relevant to this rejection are the breath of the claims, the absence of working examples, the state of the prior art and relative skill of those in the art, the unpredictability of the art, the nature of the art, the amount of direction or guidance presented, and the amount of experimentation necessary.

(1). The breath of the claims:

The breath of the claims is broad and encompasses unspecified variants regarding the method or the substance added to remove the material inhibiting the protein synthesis, and various substances used for in vitro protein synthesis, which are not adequately described or demonstrated in the specification.

(2). The absence or presence of working examples:

The specification indicates the wheat germ extract is prepared by washing with a non-ionic surfactant, 0.5% NP-40 and treatment with ultrasonication (Example 1), and a method of synthesizing protein in a cell-free protein synthesis system using the cell extract and other essential materials for protein syntheses (Examples 2-11), there are no working examples indicating using other methods or substances to remove the contaminants inhibiting the protein synthesis than non-ionic surfactant and ultrasonication, or a method of synthesizing protein in a cell-free protein synthesis system using the cell extract alone.

(3). The state of the prior art and relative skill of those in the art:

The prior art (e.g., Endou, JP-07203984) indicates a ribosome inactivation protein, Torichin (tritin) found in wheat germ extract can be removed by adding Torichin antibody and the efficiency of protein synthesis in the wheat germ cell-free protein synthesis system is increased; and Endo (J. Biotech, 25, 221-230 (1992); Example 2 of the specification) indicates a method for continuous wheat germ cell-free protein synthesis, where the reaction mixture includes the cell extract and other essential substances for protein syntheses. However, the general knowledge and level of the skill in the art do not supplement the omitted description, the specification needs to provide teachings on various methods or substances used to remove the

material inhibiting the protein synthesis or inactivating ribosome, and various substances other than cee extract used for in vitro protein synthesis to be considered enabling for variants.

(4). Predictability or unpredictability of the art:

The claims encompass a preparation of a cell extract for cell-free protein synthesis, wherein the material inhibiting the protein synthesis is removed and a method of synthesizing protein in a cell-free protein synthesis system using the cell extract, however, various methods or substances used to remove the material inhibiting the protein synthesis or inactivating ribosome in a cell-free protein synthesis system, or a method for protein synthesis in a cell-free protein synthesis system using cell extract alone or the cell extract with various substances have not described, the invention is highly unpredictable regarding the efficiency of in vitro protein synthesis.

(5). The amount of direction or guidance presented and the quantity of experimentation necessary:

The claims are directed to a preparation of a cell extract for cell-free protein synthesis, wherein the material inhibiting the protein synthesis is removed and a method of synthesizing protein in a cell-free protein synthesis system using the cell extract. The specification indicates the wheat germ extract is prepared by washing with a non-ionic surfactant, 0.5% NP-40 and treatment with ultrasonication (Example 1), and a method of synthesizing protein in a cell-free protein synthesis system using the cell extract and other essential materials for protein syntheses (Examples 2-11), However, the specification has not demonstrated the material inhibiting the protein synthesis can be removed by methods other than treatment with non-ionic surfactant or ultrasonication, or a method of synthesizing protein in a cell-free protein synthesis system using

the cell extract alone or the cell extract with various substances, which are not identified. Moreover, there are no working examples indicating the use of other methods or substances than non-ionic surfactant and ultrasonication for removing materials inactivating ribosome or inhibiting protein synthesis, or a method of synthesizing protein in a cell-free protein synthesis system using the cell extract alone. Since the specification fails to provide sufficient teachings on the methods to remove materials inhibiting protein synthesis, or a method of synthesizing protein in a cell-free protein synthesis system using the cell extract with unspecified substances, it is necessary to have additional guidance and to carry out further experimentation to assess the efficiency of in vitro protein synthesis using the claimed variants.

(6). Nature of the Invention

The scope of the claims encompasses a preparation of a cell extract for cell-free protein synthesis, wherein the material inhibiting the protein synthesis is removed and a method of synthesizing protein in a cell-free protein synthesis system using the cell extract, but the specification does not demonstrate a method of synthesizing protein in a cell-free protein synthesis system using the cell extract alone, or the cell extract with unspecified substances. Thus, the disclosure is not enabling for the reasons discussed above.

In summary, the scope of the claim is broader than the enabling disclosure. The working examples do not demonstrate the claimed methods, the efficiency of the claimed method is unpredictable, and the teaching in the specification is limited, therefore, it is necessary to have additional guidance and to carry out further experimentation to assess the efficiency of in vitro protein synthesis using the claimed variants.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-11, 13, 15-21 and 23-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claims 1-11, 15-21 and 23-28 are indefinite because the claim cites "substantially excluding systems involving in inhibiting synthesis reaction of said own protein", it also cites an endosperm which contaminates an extract of embryo is completely removed therefrom, it is not clear whether the system involving in inhibiting protein synthesis is completely or substantially removed, and to what extent the system is excluded as to "substantially excluding systems". Claims 2-11, 15-21 and 23-28 are included in this rejection for being dependent on a rejected claim and not correcting the deficiency of the claim from which they depend.

7. Claims 2 and 3 recite the limitation "the method" in line 3. There is insufficient antecedent basis for this limitation in the claim.

8. Claims 4, 15, 16, 19 and 26 are indefinite because of the use of the term "wherein the inhibition of the own reaction of protein synthesis excluding the systems serves as controlling deadenination of ribosome". The cited term renders the claim indefinite, it is not clear what the term means, e.g., the inhibition of protein synthesis is caused by deadenination of ribosome, it is not clear how the system involving in the inhibition of protein synthesis also controls deadenination of ribosome, and what "deadenination" means, since neither the specification nor the prior art define the term. Claims 19 and 26 are included in this rejection for being dependent

on a rejected claim and not correcting the deficiency of the claim from which they depend. Regarding "deadenination", see also claims 5, 6 and 13.

9. Claims 5, 6, 20, 21, 27 and 28 are indefinite because of the use of the term "a substance is added which controls deadenination of ribosome" or "a substance controlling deadenination of ribosome". The cited term renders the claim indefinite, it is not clear what the substance is. Claims 20, 21, 27 and 28 are included in this rejection for being dependent on a rejected claim and not correcting the deficiency of the claim from which they depend.

10. Claims 7-9 and 17-20 are indefinite because the claim recites "A preparation" in line 1, "s substance" in line 2 and "a preparation" in line 3, it is not clear whether the preparation or the substance are different from each other. Claims 8 and 9 are included in this rejection for being dependent on a rejected claim and not correcting the deficiency of the claim from which they depend.

11. Claims 10, 11 and 13 are indefinite because of the use of the term "a material substance", "the material substance" or "the substrate and others". The cited term renders the claim indefinite, it is not clear what the material substance or the substrate and others are. Claim 11 recites the limitation "the reaction vessel" in line 3, "the material substance " in line 4, and "the product" in line 5. There is insufficient antecedent basis for this limitation in the claim.

12. Claims 10, 11 and 23-29 are indefinite because the claims lack essential steps in the method for cell-free protein synthesis. The omitted steps are the indispensable substances used for in vitro protein synthesis and a step on how the protein synthesis being carried out using the cell extract and the indispensable compounds.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 1, 4, 5, 23, 26 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Endou (JP-07203984, August 1995). The rejection is based on an electronic translation of the patent publication from Japan Patent Office. An English translation of the publication will forward to applicant when it is available.

Endou teaches a ribosome inactivation protein, named Torichin (tritin) found in wheat germ can inactivate ribosome by removing an adenine from 28S rRNA (paragraph 0019), and a wheat germ extract is prepared by removing Torichin activity by column and adding Torichin antibody (paragraph 0029, claims 1, 4 and 5). The efficiency of protein synthesis in a wheat germ cell-free protein synthesis system is increased by using Torichin antibody and removing neutralized Torichin (paragraphs 0031-0038, Drawings 2 and 3, Examples 2-3; claims 23, 26 and 27).

Conclusion

14. No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Min Kam whose telephone number is (703) 308-9437. The examiner can normally be reached on 8.00-4:30, Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Low, Ph. D. can be reached on (703) 308-2923. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 308-4227 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

Chih-Min Kam, Ph. D. CMK
Patent Examiner

CHRISTOPHER S. F. LOW
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600

***

August 20, 2003

FORM PTO-1449 (REV 7-80)	Atty. Docket No. 3190-012	Application No. 10/019,995
INFORMATION DISCLOSURE STATEMENT	APPLICANT: ENDO, et al.	
	Filing Date: November 9, 2001	Group Art Unit: Unassigned

U.S. PATENT DOCUMENTS

EXAMINER'S INITIALS		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	FILING DATE, IF APPROPRIATE

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB-CLASS	TRANSLATION YES	NO
CMK		WO 98/02532	1/22/98	WIPO			Abstract	
		JP 10-080295	3/31/98	Japan			Abstract	
CMK		JP 07-203984	8/8/95	Japan			Abstract	

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

EXAMINER	DATE CONSIDERED
	8/21/03

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Notice of References Cited	Application/Control No. 10/019,995	Applicant(s)/Patent Under Reexamination ENDO ET AL.	
	Examiner Chih-Min Kam	Art Unit 1653	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-5,593,856	01-1997	Chao et al.	435/68.1
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
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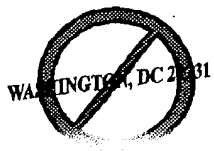

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